

patients. They say EDTA causes the same effects in higher doses.

The authors also state that the addition of the preservatives was not preceded by safety studies, and they cite evidence that, indeed, the preservatives do not prevent bacterial contamination. Leslie Hendeles, a professor of pharmacy and pediatrics at the University of Florida who coauthored the study, says, "The preservatives don't prevent bacterial contamination, so they don't appear to have any benefits, and can actually cause harm."

The authors recommend that patients avoid the preservatives by using nebulizer solutions that are dispensed in preservative-free, sterile, single-dose vials, which have been shown to remain free of significant bacterial contamination. They point out that these single-dose vials are either the preferred product or the only nebulizer solutions available in most Western countries.

Current U.S. regulations do not require manufacturers to list on the label the concentration of preservatives contained in a product, and the amount of preservatives varies greatly between products. Also, it is legal for pharmacists to substitute these medications for one another so that even when a doctor has prescribed a preservative-free product, one containing high concentrations of BAC may be dispensed. The authors of the *Pharmacotherapy* study recommend that U.S. regulatory agencies ban the use of preservatives. In the meantime, Hendeles says he hopes the risks associated with the preservatives are communicated to pharmacists. He has worked with the Florida State Board of Pharmacy to issue a warning about the preservatives in its newsletter.

Even though a small number of patients use nebulizer solutions, Korenblat says the new information is cause for concern, and the medications should be studied further. He also says that patients should be aware of this information. "This should not raise alarm for people who have been doing well," Korenblat says, "but it is significant enough that asthma patients should know about it."

At this time, the FDA is not planning to take action on the issue, according to Robert Meyer, a medical team leader in the Division of Pulmonary Drug Products at the FDA. He says, "This is an issue that we had already been familiar with for quite a while." Because there is concern, he says the FDA recommends that the use of preservatives be avoided wherever possible, and if preservatives are necessary, they should be used in the lowest amounts possible. "We don't feel like this is a major public health problem," Meyer says. "The bottom line is that an individual who has been known to have adverse reactions should be careful to avoid the preservatives."



## Global Surveillance

At the top of the U.S. Geological Survey's (USGS) home page is the motto "science for a changing world." The USGS—charged in its mission statement with providing reliable, impartial information to describe and understand the earth—is keeping close track of the geologic, climatologic, and environmental changes the planet faces today. The USGS home page, located at <http://www.usgs.gov>, offers Web users the opportunity to explore much of this carefully gathered information.

The Featured Pages link on the home page leads to a list of browsing options. The Earthshots: Satellite Images of



Environmental Change link lets users choose from a number of satellite photographs and accompanying narratives that demonstrate the effects of desertification, air pollution, and other environmental threats. The USGS Water Resources Applications Software link leads to an array of software applications that can be downloaded off the site, such as HST3D, a three-dimensional model for simulating heat and solute transport within groundwater.

The Biology link on the home page takes users to the USGS Biological Resources Division home page. From here, users can read about the structure of the division and its current programs, projects, strategies, and partnerships, as well as browse a library of fact sheets, FAQs, and news releases. This page also boasts a Features link that leads to a photo image gallery, a children's page, education and special interest links, and even a link to a site that tracks the migratory progress of individual snow geese.

The Geology link on the home page goes to a page devoted to such geographical resources as a log of data on the latest earthquakes, a library of geological research activities searchable by state or region, and Ask-a-Geologist, in which users can have their questions about geology, geophysics, or geochemistry answered by a USGS geologist. The Geology page also contains links, under the Research link, to ongoing environment-related studies. For instance, the Global Change Research Program seeks to ensure the future availability of such human necessities as clean water and adequate food; by understanding how human activities affect environmental systems, it may be easier to formulate methods of ensuring that availability.

The Mapping link on the home page leads to information about the USGS National Mapping Program, which is responsible for providing the cartographic and remote sensing information and maps used by the USGS. This page provides links to mapping products and services such as the Geographic Names Information System—a searchable encyclopedia of nearly 2 million geographic features and cultural landmarks in the United States—and an online version of the National Atlas of the United States.

The Water link on the home page takes users to the home page for the USGS Water Resources Division, which is responsible for providing the hydrologic information used by the USGS in its mission of stewardship. The Water Data link on this page accesses a sea of information for those interested in the state of the nation's water supply. For instance, the Water Use link leads to online documentation and graphic depictions of water use data and trends in the United States by county and watershed. The Acid Rain link allows users to view levels of atmospheric depositions of various compounds by year, unit of measure, and compound.

Back at the USGS home page, the NAWQA Publications link takes users to a listing of publications—generated by 20 different water-quality studies conducted across the United States within the past decade by the USGS National Water-Quality Assessment—which document the major issues and findings, water quality conditions, and a summary of compound detections and concentrations for each sample. The USGS News and Information on El Niño link takes users to press releases, news items, and graphics documenting the latest developments in El Niño's global onslaught. And the link labeled President Clinton Announces the Clean Water Action Plan—Clean Water Initiative: Restoring and Protecting America's Waters lets users browse an outline of the initiative that includes the text of the action plan, budget information, fact sheets, planned strategies, and more.